

| | | | | |
|---------------|-----------|-----------|-----|-----|
| FFFFFFFFFFF | 111 | 111 | XXX | XXX |
| FFFFFFFFFFF | 111 | 111 | XXX | XXX |
| FFFFFFFFFFF | 111 | 111 | XXX | XXX |
| FFF | 111111 | 111111 | XXX | XXX |
| FFF | 111111 | 111111 | XXX | XXX |
| FFF | 111111 | 111111 | XXX | XXX |
| FFF | 111 | 111 | | |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111 | 111 | XXX | XXX |
| FFFFFFFFF,FFF | 111 | 111 | | |
| FFFFFFFFFFFFF | 111 | 111 | XXX | |
| FFFFFFFFFFFFF | 111 | 111 | XXX | |
| FFF | 111 | 111 | | |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111 | 111 | | |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111 | 111 | XXX | XXX |
| FFF | 111111111 | 111111111 | XXX | XXX |
| FFF | 111111111 | 111111111 | XXX | XXX |
| FFF | 111111111 | 111111111 | XXX | XXX |

[illegible]

```

LL               IIIIII               SSSSSSSSS
LL               IIIIII               SSSSSSSSS
LL               II                    SS
LL               II                    SS
LL               II                    SS
LL               II                    SS
LL               II                    SSSSSSS
LL               II                    SSSSSSS
LL               II                    SS
LL               II                    SS
LL               II                    SS
LL               II                    SS
LLLLLLLLLLLLLL  IIIIII               SSSSSSSSS
LLLLLLLLLLLLLL  IIIIII               SSSSSSSSS

```



```
1 0001 0 MODULE MAPVBN (
2 0002 0 LANGUAGE (BLISS32),
3 0003 0 IDENT = 'V04-000'
4 0004 0 ) =
5 0005 1 BEGIN
6 0006 1
7 0007 1
8 0008 1 *****
9 0009 1 *
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26 0026 1 * SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
27 0027 1 *
28 0028 1 *
29 0029 1 *****
30 0030 1
31 0031 1 ++
32 0032 1
33 0033 1 FACILITY: F11ACP Structure Level 1
34 0034 1
35 0035 1 ABSTRACT:
36 0036 1
37 0037 1 This routine maps the specified virtual blocks to their
38 0038 1 corresponding logical blocks using the supplied window.
39 0039 1 The window is turned if necessary.
40 0040 1
41 0041 1 ENVIRONMENT:
42 0042 1
43 0043 1 STARLET operating system, including privileged system services
44 0044 1 and internal exec routines.
45 0045 1
46 0046 1 --
47 0047 1
48 0048 1
49 0049 1 AUTHOR: Andrew C. Goldstein, CREATION DATE: 3-Mar-1977 12:20
50 0050 1
51 0051 1 MODIFIED BY:
52 0052 1
53 0053 1 V03-006 CDS0005 Christian D. Saether 20-Aug-1984
54 0054 1 Modify test for no lock.
55 0055 1
56 0056 1 V03-005 CDS0004 Christian D. Saether 14-Aug-1984
57 0057 1 Modify handling of fcb rebuilding.
```

```

: 58 0058 1 :
: 59 0059 1 :
: 60 0060 1 :
: 61 0061 1 :
: 62 0062 1 :
: 63 0063 1 :
: 64 0064 1 :
: 65 0065 1 :
: 66 0066 1 :
: 67 0067 1 :
: 68 0068 1 :
: 69 0069 1 :
: 70 0070 1 :
: 71 0071 1 :
: 72 0072 1 :
: 73 0073 1 :
: 74 0074 1 :
: 75 0075 1 :
: 76 0076 1 :
: 77 0077 1 :
: 78 0078 1 :
: 79 0079 1 :
: 80 0080 1 :
: 81 0081 1 :
: 82 0082 1 :
: 83 0083 1 :
: 84 0084 1 :

V03-004 CDS0003 Christian D. Saether 25-Apr-1984
Use longword addressing on some routines.

V03-003 CDS0002 Christian D. Saether 30-Dec-1983
Use L_NORM linkage and BIND_COMMON macro.

V03-002 CDS0001 Christian D. Saether 2-Feb-1983
Changes for distributed file system. Don't believe
FCB$L_FILESIZE anymore, always check the header.

V03-001 ACG0297 Andrew C. Goldstein, 5-Aug-1982 18:26
Fix maintenance of UCB context in updating cathedral windows

V02-004 ACG0229 Andrew C. Goldstein, 23-Dec-1981 21:08
Move updating of PMS$GL_TURN from TURN_WINDOW

V02-003 LMP0003 L. Mark Pilant, 9-Dec-1981 14:07
Added support for cathedral windows.

V02-002 ACG0167 Andrew C. Goldstein, 16-Apr-1980 19:25
Previous revision history moved to F11A.REV

**

LIBRARY 'SYSS$LIBRARY:LIB.L32';
REQUIRE 'SRC$:FCPDEF.B32';
```



```

86 1075 1 GLOBAL ROUTINE MAP_VBN (VBN, WINDOW, BLOCK_COUNT, UNMAPPED_BLOCKS) : L_NORM =
87 1076 1
88 1077 1 ++
89 1078 1
90 1079 1 FUNCTIONAL DESCRIPTION:
91 1080 1
92 1081 1 This routine maps the specified virtual blocks to their
93 1082 1 corresponding logical blocks using the supplied window.
94 1083 1 the window is turned if necessary.
95 1084 1
96 1085 1 CALLING SEQUENCE:
97 1086 1 MAP_VBN (ARG1, ARG2, ARG3, ARG4)
98 1087 1
99 1088 1 INPUT PARAMETERS:
100 1089 1 ARG1: desired VBN
101 1090 1 ARG2: address of window to use
102 1091 1 ARG3: number of blocks to map
103 1092 1 if not present, 1
104 1093 1
105 1094 1 IMPLICIT INPUTS:
106 1095 1 CURRENT_VCB: address of VCB in process
107 1096 1 CURRENT_UCB: address of UCB in process
108 1097 1
109 1098 1 OUTPUT PARAMETERS:
110 1099 1 ARG4: if present, address to store number of unmapped blocks
111 1100 1
112 1101 1 IMPLICIT OUTPUTS:
113 1102 1 NONE
114 1103 1
115 1104 1 ROUTINE VALUE:
116 1105 1 starting LBN or -1 if no map
117 1106 1
118 1107 1 SIDE EFFECTS:
119 1108 1 window may be turned, header may be read, volume may be switched
120 1109 1
121 1110 1 --
122 1111 1
123 1112 2 BEGIN
124 1113 2
125 1114 2 MAP
126 1115 2 WINDOW : REF BBLOCK;
127 1116 2
128 1117 2 LOCAL
129 1118 2 COUNT, : number of blocks to map
130 1119 2 UNMAPPED, : address to store unmapped block count
131 1120 2 DUMMY, : place for above by default
132 1121 2 UCB : REF BBLOCK, : address of mapping UCB
133 1122 2 FCB : REF BBLOCK, : address of FCB of file
134 1123 2 HEADER : REF BBLOCK, : address of file header
135 1124 2 LBN; : resulting LBN of map
136 1125 2
137 1126 2 EXTERNAL
138 1127 2 CLUS$GL CLUB : ADDRESSING_MODE (GENERAL);
139 1128 2 PMS$GL TURN : ADDRESSING_MODE (ABSOLUTE);
140 1129 2 : system count of window turns
141 1130 2
142 1131 2 BIND_COMMON;
```

```
143 1132 2
144 1133 2
145 1134 2 EXTERNAL ROUTINE
146 1135 2 REBLD_PRIM_FCB : L_NORM NOVALUE, ! rebuild a primary fcb from header
147 1136 2 BUILD_EXT_FCBS : L_NORM NOVALUE, ! build extension fcb chain,
148 1137 2 SWITCH_VOLUME : L_NORM, ! switch context to specified volume
149 1138 2 MAP_WINDOW : L_NORM, ! scan window map
150 1139 2 READ_HEADER : L_NORM, ! read file header
151 1140 2 TURN_WINDOW : L_NORM ADDRESSING_MODE (GENERAL), ! turn window
152 1141 2 REMAP_FILE : L_NORM; ! remap the file into segmented windows
153 1142 2
154 1143 2 ! Check the VBN for legality - i.e., non-zero
155 1144 2 !
156 1145 2
157 1146 2 FCB = .WINDOW[WCBSL_FCB];
158 1147 2
159 1148 2 IF .VBN EQL 0
160 1149 2 THEN
161 1150 2 RETURN -1;
162 1151 2
163 1152 2 IF .VBN GTRU .FCB [FCBSL_FILESIZE]
164 1153 2 THEN
165 1154 2 BEGIN
166 1155 2
167 1156 2 IF .FCB [FCBSB_ACCLKMODE] NEQ 0
168 1157 2 THEN
169 1158 2 BEGIN
170 1159 2 IF NOT .FCB [FCBSV_STALE]
171 1160 2 THEN
172 1161 2 RETURN -1;
173 1162 2 END
174 1163 2 ELSE
175 1164 2 IF NOT .BBLOCK [CURRENT_UCB [UCBSL_DEVCHAR2], DEV$V_CLU]
176 1165 2 OR .CLU$GL_CLUB EQL 0
177 1166 2 THEN
178 1167 2 RETURN -1;
179 1168 2
180 1169 2 ! Either the FCB has been marked stale, or this is a nolock access (which
181 1170 2 means the fcb is always suspect because it cannot be marked stale),
182 1171 2 so rebuild the fcb and extension fcb chain, if there is one.
183 1172 2 !
184 1173 2
185 1174 2 HEADER = READ_HEADER (0, .FCB);
186 1175 2
187 1176 2 REBLD_PRIM_FCB (.FCB, .HEADER);
188 1177 2
189 1178 2 IF .HEADER [FH2$W_EX_FIDNUM] NEQ 0
190 1179 2 OR .HEADER [FR2$B_EX_FIDNMX] NEQ 0
191 1180 2 THEN
192 1181 2 BUILD_EXT_FCBS (.HEADER);
193 1182 2
194 1183 2 END;
195 1184 2
196 1185 2 ! If an extension was done on a file which was completely mapped, and more
197 1186 2 than one user was accessing it, it is necessary to remap the file to get
198 1187 2 all the blocks correctly mapped.
199 1188 2 !
```



```
1189 2
1190 2 IF .WINDOW[WCBSV_CATHEDRAL] AND NOT .WINDOW[WCBSV_COMPLETE]
1191 2 THEN REMAP_FILE ?);
1192 2
1193 2 ! Make the filesize test again, in case we did a reconstruction of the
1194 2 ! chain above. This allows the window to be remapped in that case, if
1195 2 ! necessary.
1196 2
1197 2
1198 2 IF .VBN GTRU .FCB [FCBSL_FILESIZE]
1199 2 THEN
1200 2     RETURN -1;
1201 2
1202 2 ! If the file is multi-header, scan the extension FCB's for the one
1203 2 ! containing the desired VBN. The right FCB is identified by noting that
1204 2 ! there are no more, or that the start VBN of the next one is greater than
1205 2 ! the desired VBN.
1206 2
1207 2
1208 2 UNTIL
1209 2     (IF .FCB[FCBSL_EXFCB] EQL 0 THEN 1
1210 2     ELSE .BBLOCK [.FCB[FCBSL_EXFCB], FCB$STVBN] GTRU .VBN
1211 2     )
1212 2 DO FCB = .FCB[FCBSL_EXFCB];
1213 2
1214 2 ! If chasing extension FCB's took us to another volume, switch the context to
1215 2 ! that volume.
1216 2
1217 2
1218 2 SWITCH_VOLUME (.FCB[FCBSW_FID_RVN]);
1219 2
1220 2 ! Default the optional arguments.
1221 2
1222 2
1223 2 COUNT = (IF ACTUALCOUNT GEQ 3
1224 2     THEN .BLOCK_COUNT
1225 2     ELSE 1
1226 2     );
1227 2 UNMAPPED = (IF ACTUALCOUNT GEQ 4
1228 2     THEN .UNMAPPED_BLOCKS
1229 2     ELSE DUMMY
1230 2     );
1231 2
1232 2 ! Attempt to map the transfer with the existing window. If the map fails
1233 2 ! completely, turn the window and try once more. When any blocks map,
1234 2 ! return the relevant data.
1235 2
1236 2
1237 2 DECR I FROM 2 TO 1 DO
1238 2     BEGIN
1239 2
1240 2     LBN = KERNEL_CALL (MAP_WINDOW, .VBN, .WINDOW, .COUNT, .UNMAPPED, UCB);
1241 2     IF .LBN NEQ -1 THEN EXITLOOP;
1242 2
1243 2     PMSSGL_TURN = .PMSSGL_TURN + 1; ! count window turn in PMS data base
1244 2     HEADER = READ_HEADER TO, .FCB);
1245 2     KERNEL_CALL (TURN_WINDOW, .WINDOW, .HEADER, .VBN, .FCB[FCBSL_STVBN]);
```

```
! end of routine MAP_VBN
```

| | | |
|-------|-----------------------------------|------|
| ENTRY | HALT, SAVE R2, R3, R4, R5, R6, R7 | 1079 |
| SUBL2 | #8, SP | 1146 |
| MOVL | WINDOW, R0 | 1148 |
| MOVL | 24(R0), FCB | 1152 |
| TSTL | VBN | 1156 |
| BEQL | 6\$ | 1159 |
| CMPL | VBN, 56(FCB) | 1161 |
| BLEQU | 4\$ | 1164 |
| TSTB | 11(FCB) | 1165 |
| BEQL | 1\$ | 1174 |
| BLBS | 35(FCB), 2\$ | 1176 |
| BRB | 6\$ | 1178 |
| MOVL | -108(BASE), R0 | 1179 |
| BLBC | 60(R0), 6\$ | 1181 |
| TSTL | CLUSGL_CLUB | 1188 |
| BEQL | 6\$ | 1190 |
| PUSHL | FCB | 1191 |
| CLRL | -(SP) | 1198 |
| CALLS | #2, READ HEADER | 1200 |
| MOVL | R0, HEADER | |
| PUSHR | #^M<R2, R3> | 1176 |
| CALLS | #2, REBLD PRIM_FCB | 1178 |
| TSTW | 14(HEADER) | 1179 |
| BNEQ | 3\$ | 1181 |
| TSTB | 19(HEADER) | 1188 |
| BEQL | 4\$ | 1190 |
| PUSHL | HEADER | 1191 |
| CALLS | #1, BUILD EXT_FCBS | 1198 |
| MOVL | WINDOW, R0 | 1200 |
| BBC | #6, 11(R0), 5\$ | |
| BBS | #5, 11(R0), 5\$ | 1191 |
| CALLS | #0, REMAP FILE | 1198 |
| CMPL | VBN, 56(FCB) | |
| BLEQU | 7\$ | 1200 |
| MNEGL | #1, R0 | |
| RET | | |

| | | | | | | | | | | |
|-----------|-------|-----------|----|-------|-------|-------|--------|---------------------------|---|------|
| | 50 | 0C | A2 | D0 | 00076 | 7\$: | MOVL | 12(FCB), R0 | : | 1209 |
| | | | 0C | 13 | 0007A | | BEQL | 8\$ | : | |
| 04 | AC | 2C | A0 | D1 | 0007C | | CMPL | 44(R0), VBN | : | 1210 |
| | | | 05 | 1A | 00081 | | BGTRU | 8\$ | : | |
| | 52 | | 50 | D0 | 00083 | | MOVL | R0, FCB | : | 1212 |
| | | | EE | 11 | 00086 | | BRB | 7\$ | : | |
| | 7E | 28 | A2 | 3C | 00088 | 8\$: | MOVZWL | 40(FCB), -(SP) | : | 1218 |
| 0000G | CF | | 01 | FB | 0008C | | CALLS | #1, SWITCH_VOLUME | : | |
| | 03 | | 6C | 91 | 00091 | | CMPB | (AP), #3 | : | 1223 |
| | | | 06 | 1F | 00094 | | BLSSU | 9\$ | : | |
| | 56 | 0C | AC | D0 | 00096 | | MOVL | BLOCK_COUNT, COUNT | : | 1224 |
| | | | 03 | 11 | 0009A | | BRB | 10\$ | : | |
| | 56 | | 01 | D0 | 0009C | 9\$: | MOVL | #1, COUNT | : | 1223 |
| | 04 | | 6C | 91 | 0009F | 10\$: | CMPB | (AP), #4 | : | 1227 |
| | | | 06 | 1F | 000A2 | | BLSSU | 11\$ | : | |
| | 55 | 10 | AC | D0 | 000A4 | | MOVL | UNMAPPED_BLOCKS, UNMAPPED | : | 1228 |
| | | | 03 | 11 | 000A8 | | BRB | 12\$ | : | |
| | 55 | | 6E | 9E | 000AA | 11\$: | MOVAB | DUMMY, UNMAPPED | : | 1227 |
| | 54 | | 02 | D0 | 000AD | 12\$: | MOVL | #2, I | : | 1237 |
| | | 04 | AE | 9F | 000B0 | 13\$: | PUSHAB | UCB | : | 1240 |
| | | | 55 | DD | 000B3 | | PUSHL | UNMAPPED | : | |
| | | | 56 | DD | 000B5 | | PUSHL | COUNT | : | |
| | 7E | 04 | AC | 7D | 000B7 | | MOVQ | VBN, -(SP) | : | |
| 0000G | CF | | 05 | FB | 000BB | | CALLS | #5, MAP_WINDOW | : | |
| | 57 | | 50 | D0 | 000C0 | | MOVL | R0, LBN | : | |
| FFFFFFFF | 8F | | 57 | D1 | 000C3 | | CMPL | LBN, #-1 | : | 1241 |
| | | | 27 | 12 | 000CA | | BNEQ | 14\$ | : | |
| | | 00000000G | 9F | D6 | 000CC | | INCL | @#PMSS\$GL_TURN | : | 1243 |
| | | | 52 | DD | 000D2 | | PUSHL | FCB | : | 1244 |
| | | | 7E | D4 | 000D4 | | CLRL | -(SP) | : | |
| | 0000G | CF | 02 | FB | 000D6 | | CALLS | #2, READ_HEADER | : | |
| | 53 | | 50 | D0 | 000DB | | MOVL | R0, HEADER | : | |
| | | 2C | A2 | DD | 000DE | | PUSHL | 44(FCB) | : | 1245 |
| | | 04 | AC | DD | 000E1 | | PUSHL | VBN | : | |
| | | | 53 | DD | 000E4 | | PUSHL | HEADER | : | |
| | | 08 | AC | DD | 000E6 | | PUSHL | WINDOW | : | |
| 00000000G | 00 | | 04 | FB | 000E9 | | CALLS | #4, TURN_WINDOW | : | |
| | BD | | 54 | F5 | 000F0 | | SOBGTR | I, 13\$ | : | 1237 |
| 94 | AA | 04 | AE | D1 | 000F3 | 14\$: | CMPL | UCB, -108(BASE) | : | 1249 |
| | | | 04 | 13 | 000F8 | | BEQL | 15\$ | : | |
| | | | | FEFF | 000FA | | BUGW | | : | 1250 |
| | | | | 0000* | 000FC | | .WORD | <BUG\$_BADRVNWCBS!4> | : | |
| | 50 | | 57 | D0 | 000FE | 15\$: | MOVL | LBN, R0 | : | 1251 |
| | | | 04 | 00101 | | | RET | | : | 1253 |

; Routine Size: 258 bytes, Routine Base: \$CODE\$ + 0000

| | | | | |
|---|-----|------|---|--------|
| : | 265 | 1254 | 1 | |
| : | 266 | 1255 | 1 | END |
| : | 267 | 1256 | 0 | ELUDOM |

PSECT SUMMARY

| Name | Bytes | Attributes |
|----------|-------|--|
| \$CODE\$ | 258 | NOVEC,NOWRT, RD , EXE,NOSHR, LCL, REL, CON,NOPI,ALIGN(2) |

Library Statistics

| File | Symbols | | Pages Mapped | Processing Time |
|---------------------------------|---------|-------------------|-----------------|--------------------|
| | Total | Loaded Percent | | |
| _\$255\$DUA28:[SYSLIB]LIB.L32;1 | 18619 | 30 0 | 1000 | 00:01.9 |

COMMAND QUALIFIERS

BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LISS:MAPVBN/OBJ=OBJ\$:MAPVBN MSRC\$:MAPVBN/UPDATE=(ENHS:MAPVBN)

Size: 258 code + 0 data bytes
Run Time: 00:18.7
Elapsed Time: 00:51.7
Lines/CPU Min: 4021
Lexemes/CPU-Min: 47055
Memory Used: 237 pages
Compilation Complete

0171 AH-BT13A-SE
VAX/VMS V4.0

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